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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/621,619	07/21/2000	Steven D. Scherf	1364.1001-CIP2/RAG	4523

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EXAMINER

NOLAN, DANIEL A

ART UNIT	PAPER NUMBER
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2654

DATE MAILED: 05/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/621,619

Applicant(s)

SCHERF ET AL.

Examiner

Daniel A. Nolan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,12,13,17,18,21,23,24,31,32,40 and 41 is/are rejected.
- 7) ☒ Claim(s) 3-11,14-16,19,20,22,25-30,33-39 and 42 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 July 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The listing of references in the specification is not a proper information disclosure statement (page 4 line 20 – page 5 lines 2 & 10, page 13 lines 12-14, page 14 line 2). 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description:

- 205 (figure 2) is not described.
- 335 (figure 3) is not described.

A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The abstract of the disclosure is objected to because it exceeds 150 words.

Correction is required. See MPEP § 608.01(b).

4. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

- Claims 9, 17, 27, 37, 43 and 45 all stipulate that the removable media & equipment is *possessed by the user*, while the specification is silent as to ownership.

The Examiner is proceeding with the understanding that ownership is not relevant.

- Claims 10, 18, 28, 38 and 44 stipulate that the *files are stored on mass storage accessible by a listener of the selected recording*. The specification provides no indication that the listener stored the files or that they are necessarily accessible.

The Examiner is proceeding with the understanding that the issue of *who stored the files* is not germane to the claims and that the *listener, by definition, must access the recordings*.

- Claims 20, 30 and 46 stipulate sending information “not included in the selection”, which negative feature is affirmed by the specification. The Examiner is proceeding with the understanding that the limitation intended is “information pertaining to the recording, that is stored with the recording on the database”.

5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested:

“Waveform Identification by Matching with Database Records”.

Claim Objections

6. Claims 3, 7, 8, 15, 16, 20, 29, 30 & 46 are objected to because of the following informalities:

- In claim 3, “selecting” should be “selected (3rd line).
- Claims 7, 8, 15, 16, 20, 29, 30 & 46 contain the adverb “approximately”.

It is suggested to use the more standard 'substantially'.

- Claim 29 contains the adverb “temporarily”. It is suggested to use a more precise definition.
- Claims 20, 30 and 46 contain the negative word “not” which suggests that an element is being subtracted. This is improper, and should be corrected by redrafting the claim, or the earlier claim being limited.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Pfeiffer et al

7. Claims 1, 2, 21, 23-24 and 31-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Pfeiffer et al ("Automatic Audio Content Analysis", 4th ACM International Conference on Multimedia, February 1997).

8. Regarding claims 1 and 31, Pfeiffer et al, with the invention for *speech determined from adaptively-threshold wavelet transforms*, reads on the claim for *searching for a match in a database of a plurality of records* (last line of 2nd paragraph section 4.1, page 25), *where the records in the database correspond to recordings containing waveforms* (designated "fuf" – see section 3.3.2 attributes & figure 3, page 24), as follows:

- Pfeiffer et al reads on the feature of *generating an amplitude signature for at least one segment of a selected recording* (2nd paragraph section 3.31, page 23); and

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- Pfeiffer et al reads on the feature of *determining at least one matching record in the database for the selected recording based on the amplitude signature* (1st & 3rd paragraphs section 4.1, page 25).

9. Regarding claims 2 and 32; the claims are set forth with the same limits as claims 1 and 31, respectively. Pfeiffer et al reads on the feature of *calculating approximate length information for the records in the database and for the selected recording* (right column lines 4-5, page 27), and that the *determining is also based on the approximate length information (with good correlation, right column 7-9, page 27)*.

10. Regarding claim 21, the features of the claim are the same as those found in claim 1 and the claim is rejected for the same reason. Pfeiffer et al reads on the claim for a *database system* as follows:

- Pfeiffer et al reads on the feature for a *storage unit storing a database of records* (last line of 2nd paragraph section 4.1, page 25) *including existing signatures for recordings corresponding to the records* (2nd line left column page 26); and
- Pfeiffer et al reads on the feature for a *processing unit* (the computer, 3rd line right column page 21), *coupled to the storage unit* (see figure 6), *programmed to generate an identifying amplitude signature for a selected recording* (2nd paragraph section 3.31, page 23), *and to determine at least one matching record in the database for the selected recording by comparing the identifying amplitude signature with the existing amplitude signatures in the database* (1st line right column page 26).

11. Regarding claims 23 and 24, the claims are set forth with the same limits as claim 21. With regard to the features the claims share in common, Pfeiffer et al reads on the feature of the claims:

- where *the recordings contain sampled digital data* (1st 3 lines 2nd paragraph left column page 26),
- where *the storage unit stores the existing signature array with each element corresponding to a number of occurrences of the sampled digital data within an amplitude band in at least one segment of the recordings represented in the database* (2nd line, left column & 1st paragraph, section 3.3.1, page 23), and
- where *the processing unit generates the identifying signature array with each element corresponding to a number of occurrences of the sampled digital data within an amplitude band in at least one segment of the selected recording* (2nd paragraph section 3.3.2 page 24) *and determines the at least one matching record* (1st line right column page 26).

With particular regard to claim 23, Pfeiffer et al reads on the distinct feature of *calculating an average difference between the elements of the identifying signature array and the existing signature array for the recordings represented in the database and identifying as a possible match any recording represented in the database for which the average difference is greater than a predetermined value* (with the average similarity of paragraph "2." in the right column of page 26).

With particular regard to claim 24, Pfeiffer et al reads on the distinct feature of *calculating a matching percentage of corresponding elements in the identifying signature array and the existing signature arrays within a predetermined number of each other and indicating as a possible match any recording represented in the database for which the matching percentage is greater than a predetermined percentage* (with the *must be above 85%* of paragraph "2", right column of page 26).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Pfeiffer et al & O'Hagan et al

14. Claims 12 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pfeiffer et al in view of O'Hagan et al (U.S. Patent 5,581,658 A).

15. Regarding claims 12 and 40, the claims are set forth with the same limits as claims 1 and 31, respectively. Pfeiffer et al does not mention *signature array* while O'Hagan et al, with the invention for an *adaptive system for broadcast program identification and reporting*, read on the features of the claims as follows:

- O'Hagan et al reads on the feature where *the waveforms are represented by sampled digital data in the recordings and the selected recording (84 in figure 4A – see column 2 lines 3-9), storing an existing signature array for each of the recordings represented in the database (column 5 lines 40-46),*
- O'Hagan et al reads on the feature *where each element of the existing signature array corresponds to a number of occurrences of the sampled digital data within an amplitude band (column 5 lines 11-14) in at least one segment of the recordings represented in the database (claim 5 column 16 line 57), and*
- O'Hagan et al reads on the feature where *the generating produces an identifying signature array with each element of the identifying signature array corresponding to a number of occurrences of the sampled digital data within an amplitude band (column 5 lines 11-14) in the at least one segment of the selected recording (column 5 lines 42-45 & claim 5 line 57).*

It would have been obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method/teachings of O'Hagan et al to the device/method of Pfeiffer et al to identify signals without requiring special broadcast coding.

Pfeiffer et al, O'Hagan et al & Lert, Jr. et al

16. Claims 13 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pfeiffer et al in view of O'Hagan et al and further in view of Lert, Jr. et al (U.S. Patent 4,677,466 A).

17. Regarding claims 13 and 41, the claims are set forth with the same limits as claims 12 and 40, respectively. Neither Pfeiffer et al nor O'Hagan et al mention identification by difference.

Lert, Jr. et al, in the invention of a *broadcast program identification method and apparatus*, reads on the feature where the *determining includes calculating an average difference between the elements of the identifying signature array and the existing signature array for the recordings represented in the database* (column 8 line 42) and *identifying as a possible match any recording represented in the database for which the average difference is greater than a predetermined value* (column 8 lines 45-48).

It would have been obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method/teachings of Lert, Jr. et al to the device/method of Pfeiffer et al & O'Hagan et al to compare subsequent events thereby eliminating the need for embedded cues.

Pfeiffer et al & Lert, Jr. et al

18. Claims 17-18 and 43-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pfeiffer et al in view of Lert, Jr. et al.

19. Regarding claims 17 and 43 as understood by the Examiner, the claims are set forth with the same limits as claims 12 and 40, respectively. Pfeiffer et al does not specify *removable* recording but Lert, Jr. et al reads on the feature where *the recordings are stored on removable storage media* (column 3 lines 55-56). It would have been obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method/teachings of Lert, Jr. et al to the device/method of Pfeiffer et al so as to avoid the necessity of real-time processing.

20. Regarding claims 18 and 44, the claims are set forth with the same limits as claims 12 and 40, respectively. Pfeiffer et al reads on the feature where *the recordings are digital files stored on mass storage* (2nd paragraph section 4.1 page 25).

Pfeiffer et al, O'Hagan et al & McNab et al

21. Claims 45 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pfeiffer et al in view of O'Hagan et al and further in view of McNab et al ("Towards the Digital Music Library: Tune Retrieval From Acoustic Input", Proceedings of the 1st ACM international conference on Digital libraries, April 1996).

22. Regarding claim 45 as understood by the Examiner, the claim is set forth with the same limits as claim 1. Neither Pfeiffer et al nor O'Hagan et al mention *locations*. McNab et al reads on the features where *the selected recording is played at a first location, generating a query and sending the query to a server at a second location where the database is stored* (with the operation described in the 3rd paragraph of the Conclusion section page 18 being that of such a server to handle the database for remote listening), *to search for at least one matching record* (described in the paragraph beginning with the 5th line of the right column page 11). It would have been obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method/teachings of McNab et al to the device/method of Pfeiffer et al & O'Hagan et al to give music librarians the ability to respond to the common request for a song given the hint of a melody (Introduction, page 11).

23. Regarding claim 46 as understood by the Examiner, the claim is set forth with the same limits as claim 45. Pfeiffer et al reads on the feature of *sending from the server to the equipment at the first location additional information stored in the at least one approximately matching record and not included in the selected recording* (as with names & other information included in the 4th line, 2nd paragraph section 4.1 page 25).

Allowable Subject Matter

24. Claims 3-11, 14-16, 19-20, 22, 25-30, 33-39 and 42 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

25. The following is a statement of reasons for the indication of allowable subject matter:

- The present invention is directed to identifying and retrieving recorded audio by sound.
- Claims 3, 22 and 33 identify the uniquely distinct feature "... that calculates a length of each track of each recording represented in the database and for the selecting recording where the determining is also based on the number and length of each track of the recordings represented in the database and the selected recording.

The closest prior art, Pfeiffer et al with Sussman, teach that *tracks are computed, stored and used in retrieval* (2nd paragraph section 4.1, 3rd line page 25 & 2nd paragraph right column page 27) but only come into play after determination, as a process of "fitting" the retrieved selection but *tracks* are not considered in the selection process. Consequently, the prior art of reference fails to anticipate or render the above underlined limitations obvious.

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- Regarding claims 14 and 42, the closest prior art of Lert, Jr. et al fails to anticipate or find in obvious combination the feature of indicating as a possible match any recording represented in the database for which the matching percentage is greater than a predetermined percentage.
- With regard to claim 25, the closest prior art of McNab et al ("Towards the Digital Music Library: Tune Retrieval From Acoustic Input", 1st ACM International Conference on Digital Libraries, April 1996) would read on the feature *to receive a query including the number of segments and the length information for the selected recording* but for the underlined limitations, which are neither anticipated nor found in obvious combination in the prior art of reference.
- Claims 4-11, 15-16, 19-20, 22, 26-30 and 34-39 depend on claims that were found to be allowable and so will they be allowed as a result.

26. As allowable subject matter has been indicated, applicant's reply must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 CFR 1.111(b) and MPEP § 707.07(a).

Conclusion

27. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Sussman (U.S. Patent 5,262,940 A) audio/audio-visual media tracking device.
- Sakamoto et al (U.S. Patent 5,671,330 A) speech determined from adaptively-threshold wavelet transforms.
- Ikeda (Japan Patent 03-240100) voice vocoder includes sound source identification, calculates amplitude and position to select the best quantization pattern.
- Gill et al (U.S. Patent 4,415,767 A) for speech recognition and reproduction.
- Larson, Jr. (U.S. Patent 5,539,635 A) broadcasting identification & distribution.

28. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Daniel A. Nolan at telephone (703) 305-1368 whose normal business hours are Mon, Tue, Thu & Fri, from 7 AM to 5 PM.

If attempts to contact the examiner by telephone are unsuccessful, supervisor Richemond Dorvil can be reached at (703)305-9645.

The fax phone number for Technology Center 2600 is (703)872-9314. Label informal and draft communications as "DRAFT" or "PROPOSED", & designate formal communications as "EXPEDITED PROCEDURE". Formal response to this action may be faxed according to the above instructions,

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or mailed to:

P.O. Box 1450
Alexandria, VA 22313-1450

or hand-deliver to: Crystal Park 2,
2121 Crystal Drive, Arlington, VA,
Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to Technology Center 2600 Customer Service Office at telephone number (703) 306-0377.

Daniel A. Nolan
Examiner
Art Unit 2654

DAN/d
April 27, 2004


RICHEMOND DORVIL
SUPERVISORY PATENT EXAMINER